

Live Football and Tourism Expenditure: Match Attendance Effects in the UK*

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Abstract

Research question: The inbound tourist expenditure generating role of football (soccer), particularly the English Premier League (EPL) is evaluated. An enhanced economic and management understanding of the role of regular sporting fixtures emerges, as well as quantification of their impact. Expenditure on football tickets is isolated to identify local economic spillovers outside the stadium walls. **Research methods:** Using the UK International Passenger Survey, unconditional quantile regressions (UQR) is used to evaluate the distributional impact of football attendance on tourist expenditures. Both total expenditure, and a new measure which adjusts expenditures for football ticket prices, are considered. UQR is a novel technique which is as yet underexploited within sport economics and confers important methodological advantages over both OLS and quantile regressions. **Results and findings:** Significant cross quantile variation is found. High spending football fans

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1 spend more, even after ticket prices are excluded. Surprisingly, spending effects owing to
2 attendance are strongest for those who overall spend the least, confirming the role of sport
3 as a generator of tourist expenditure unlike most others. Though the attendance effect is
4 smaller for higher aggregate spenders, there is nevertheless a significant impact across the
5 distribution. **Implications:** Distributional expenditure impacts highlight clear differentials
6 between attendance by high and low spenders. Similar analysis is applicable to other global
7 brands such as the National Football League (NFL) in the United States (American football)
8 and the Indian Premier (cricket) League. The EPL's global popularity can be leveraged for
9 achieving enhanced tourist expenditure.

10 Keywords: tourist expenditure, football attendance, unconditional quantile regression

11 JEL Classifications: C5, D1, F61

12 Introduction

13 The English Premier League (EPL) for football (soccer) has a significantly large global televi-
14 sion audience of about 730 million in more than 185 countries (Javid, 2015). Inbound tourism
15 fosters economic growth and generates revenue for the host economy (De Vita and Kyaw, 2016).
16 For the United Kingdom government, and tourism promotion agencies such as Visit Britain,
17 increasing inbound tourist numbers and tourist expenditures is an important policy goal, ob-
18 tainable by leveraging the global interest in English football into tourism related revenues. Key
19 football games usually take place during the low season of tourist demand, which presents an
20 opportunity for exploiting spare capacity and generating tourist visits motivated by attendance
21 at football games. Data from the UK International Passenger Survey (IPS) demonstrates the off
22 season advantage clearly, with 80% of visits that included attendance at live football occurring
23 between September and April. Overall, an estimated eight hundred thousand trips to the UK
24 included attendance at a live football match in 2014, or 1 in 43 visits to the UK (Visit Britain,
25 2015). Aggregate comparisons further show that those tourists who attended matches spent

1 more than those who did not (Visit Britain, 2015). Economic benefits from understanding this
2 impact are clear.

3 Adopting a distributional perspective, this paper shows that much of the attendance effect
4 is drawn from lower end of the total expenditure distribution. By isolating match ticket prices,
5 a novel measure of expenditure is developed that informs on the wider economic impact of
6 the visits. Demonstrating football's impact in this way reveals that much of the effects are in-
7 significant at the lower end of the spending distribution, but higher spenders are nevertheless
8 influenced through attendance leading to higher expenditures outside the stadium. These results
9 show the ability of the game to attract spending across the expenditure distribution, particularly
10 from higher spenders. Targeted promotion of footballing events and supporting policy can thus
11 be better developed. Whilst this paper focuses on the UK, the analysis is applicable to other
12 global brands such as the National Football League (NFL) in the United States (American foot-
13 ball) and the Indian Premier (cricket) League (IPL). This highlights the importance of sporting
14 events in generating tourism expenditures contributing to economic growth overall.

15 This research is highly relevant to sport management because it relates to three important
16 aspects covered in the literature. Firstly, fan value co-creation (Kolyperas et al., 2018) and the
17 associated spillover of good feeling (or positive experiences) which attract further attendees.
18 Secondly, expenditure from the inbound tourists has direct impacts such as positive effects on
19 club operating margins. Such benefits derive from the relationship between supporter experi-
20 ence and consequent improved supporter trust in club governance (Rohde and Breuer, 2017).
21 In addition to tourist visits and expenditures, global sporting brands and merchandise are im-
22 portant sources of revenue. There is a significant role for globally based fans and spectators of
23 international sports such as football (Chatzigianni, 2018). Cultural norms, both for particular
24 sports and sport management, have important implications for managers and fans (Girginov,
25 2010).

26 This paper makes three key contributions to enhancing the economic understanding of the

1 role of regular sporting fixtures, both in the determination of expenditure by inbound tourists
2 and in the distribution of that impact. Firstly, this is the first study assessing the role of the En-
3 glish Premier League as a driver of inbound tourist spending using IPS data for applied research.
4 Secondly, the use of unconditional quantile regression method analyses the distributional im-
5 pacts of any regular sporting fixture for the first time. Deconstructing this effect can inform
6 more effective tourism and sport promotion strategies for the UK, thereby allowing further eco-
7 nomic benefits of football related tourism to be realised for the UK economy. Finally, the ticket
8 price adjusted expenditure measure developed here does not include ticket prices and therefore
9 allows assessment of sporting fixtures (namely footballing events) on general expenditure flows
10 into the wider UK economy in a way previously not attempted.

11 The remainder of this paper is structured as follows. First the literature on sports impact on
12 tourism expenditure, effects on local communities and the approaches used to date are reviewed.
13 Next, details of the IPS dataset and the football expenditure adjusted measure are outlined
14 together with details of our empirical strategy, including the UQR methodology employed. The
15 discussion section assesses the results in light of previous empirical studies and presents policy
16 implications. The last section concludes and signposts future research directions.

17 Literature

18 Football is deeply ingrained within British society, with significant impacts on British culture,
19 communities, the economy and tourism expenditure. There is developing interest in manage-
20 ment and marketing relating to the way in which any benefits arising are moderated by the
21 fan-club relationship (Kolyperas et al., 2018) and the methods through which that process is
22 governed (Chatzigianni, 2018). Exploring works on the global appeal of the game and how
23 that translates into inbound tourism value to the UK economy is set out. Reviewing broader
24 literature on sport and tourism expenditure identifies the scarcity of work on regular sporting
25 fixtures, and a need to consider distributional impacts, which this paper seeks to address. From

extant works, insight into the ability of sport to drive higher spending is gained, with potential moderators of the relationship drawn out. This then informs the modelling that follows.

Research interest in football in the UK flows from the global reach of the EPL (Javid, 2015) and the linkage between tourism and economic spillovers (De Vita and Kyaw, 2016; Webster and Ivanov, 2014). A number of papers examine the determinants of tourist expenditures, with more distributional effects recognised in (Marrocu et al., 2015; Rashidi and Koo, 2016; Rudkin and Sharma, 2017). See Brida and Scuderi (2013) and Thrane (2014) for detailed reviews. Extrapolating the control variable set from this literature identifies factors which must be considered to accurately recognise the role of live football attendance in relation to tourist expenditures.

Theoretical determinants of inbound tourism expenditure draw from the complete experience of the visitor, their outgoings on complements and substitutes to the trip, and their income. Even detailed and large surveys such as the IPS face limitations in terms of variables available for research. Perforce, controls are limited to the set included in the IPS. Of the variables studied here, length of stay is the most widely used. It is conventionally posited that longer stays lead to more spending (Brida and Scuderi, 2013; Rudkin and Sharma, 2017; Thrane, 2014). Gender has only recently been developed as a theoretical driver; Craggs and Schofield (2009) identify females as being more likely to be heavy spenders. Links between age and expenditure are more regularly studied given the relationship with disposable income; Brida and Scuderi (2013) remark that it is the most common control in spending analysis. Chen and Shoemaker (2014) and Chen and Chen (2018) indicate that older respondents, with disposable income, are most likely to spend more. Visit purpose dictates many of the activities the respondent will undertake, e.g. those on holiday are liable to spend more carefully than those using business expense (Thrane, 2014). Requiring a visa is also a potential cause of high spending as it implies additional effort for travel. This is not a widely used control however and it is employed to gauge the willingness to obtain travel documentation. Group size is found to have mixed

1 effects; Craggs and Schofield (2009) find a positive link, whilst many others find larger groups
2 are able to obtain economies of scale and therefore respondents are likely to spend less (Cox,
3 2016; Peng et al., 2016).

4 An additional insight into opportunities to promote football is found within the influence
5 variables included in the IPS in 2014. Visits to friends and relatives are noted for generating
6 lower expenditure (Backer, 2012; Backer et al., 2017). This is partially attributable to local
7 knowledge of how to save money. Similarly, received wisdom points to variables such as “vir-
8 tual” friends and the influence of social media. Bronner and de Hoog (2016) demonstrate em-
9 pirically that travel websites are able to spark extra spending, which is something their operators
10 leverage effectively. This paper recognises these influences and embeds them within the con-
11 trol set. All remaining variation is then attributable to football. Here the costly nature of game
12 attendance intuitively suggests a stronger link to high spending.

13 Within the sports tourism literature there is considerable interest in mega events such as
14 the Olympics (Li and Song, 2013; O’Brien, 2006; Rose and Spiegel, 2011), the football World
15 Cup (Lee and Taylor, 2005), and the Commonwealth Games (Allan et al., 2017). Uniting all
16 is the belief that the impact is felt well beyond the sporting venues. Burgan and Mules (1992)
17 general study was amongst the early exponents of sport as a contributor to tourism expenditure.
18 The potential for economic benefit is explored for smaller scale events where the visitor for a
19 sporting event may be a participant (Coghlan and Filo, 2013; Whitehead and Wicker, 2018),
20 where the visitor may attend a series of events which draw on local culture (Kelly and Fairley,
21 2018; Ziakas and Costa, 2011), or, as is studied in this paper, the visitor may be one of the
22 spectators at regular sporting fixtures (Gibson et al., 2003; Whitehead et al., 2013). Focus here
23 is on economic benefits, but a large literature also considers societal effects including Kim et al.
24 (2015).

25 Uniting the literature on sport and tourism expenditure is a potential to bring economic
26 benefit, which is an opportunity policy-makers and clubs are keen to exploit. Unlike many of

the aforementioned studies, using IPS data means that all inbound tourists are considered, rather than small localised samples, enabling a better understanding of the impact of regular sporting events. It must be observed that not all studies of regular sporting fixtures find increased benefits for local communities. Depken and Stephenson (2018) explore hotel demand in the US and find that, although mega-events may bring increased occupancy before and after the event, regular fixtures do not. Baumann et al. (2009), likewise, find regular fixtures have insignificant effects on hotel usage, in their case for Hawaii. Extrapolating from this literature to football in the UK, suggests a lack of impact.

Local impacts from sport are well known from the literature on mega events (Allan et al., 2017; Daniels et al., 2004; Kim et al., 2015) but are less well understood for small scale events where domestic travel is undertaken for viewing regular sporting fixtures (Gibson et al., 2003). The economic impact that arises is captured by the expenditure within a particular locality, as a result of individuals travelling from outside the area. From an income accounting perspective Davies (2002) estimates Sheffield's two football clubs add 20% of the overall income from the commercial sport sector locally. Davis and End (2010) provide a formal economic relationship between winning teams and these resulting local economic spillovers. Quantifying the potential magnitude of these effects is a key objective of what follows.

Developing the theme of approaches to monetarising potential benefits, a growing literature proceeds from quantifying to operationalising opportunities. Taks et al. (2015) argue that appropriate strategies and tactics need to be developed before non-mega sporting events can lead to creation of desired socio-economic and other outcomes. This requires significant resources and appropriate planning. As an illustration, Taks et al. (2014) examine the 2005 Pan American Junior Athletics championship and find that while outcomes related to the sport facility itself were positive, spillover benefits related to coaching clinics, and other engagements were unclear or ineffective. They emphasise the importance of developing sporting participation. Taks et al. (2013) examine spending by non-local participants and spectators, and find that participants

1 account for the bulk of the spending (39%), while spending related to celebration and festivity
2 was less than 10% of the total.

3 Observed economic gains at the local level can be attributed to the emotional experience of
4 attendance. Whitehead et al. (2013) view such effects arising from the “happiness” owing to a
5 (positive) sporting result which leads to increased expenditures within the locality. Ge (2018)
6 finds that tipping on New York taxis is significantly influenced by close wins in sporting events,
7 and find that a deviation from expected results are responsible for increased tipping, higher
8 expenditure and increased local impact rather than expected wins or losses. Roberts et al. (2016)
9 case study of the impact of travelling supporters of Swansea City FC, a team that has enjoyed
10 periods within the English Premier League, is a further example of economic assessment from
11 a micro scale; their travellers are domestic as Gibson et al. (2003) find but the work identifies
12 many of the benefits international visitors would bring to local businesses around the stadia.

13 Very often match attendance follows from interest in football prior to the match. An emerg-
14 ing literature reviews the impact of broadcasting rights and sports events on intent to travel for
15 tourism (Cox, 2016). Chinese internet users cite the utility they derive from belonging to a
16 football club community developed from their televisual and internet viewing as a motivation
17 to travel to the UK, which is a relationship that holds irrespective of team performance (Peng
18 et al., 2016). Similar themes emerge from study of Japanese sport travel motivations (Nishio
19 et al., 2016).

20 Subsequent analysis focuses on observed spending levels recognising that there are positive
21 welfare gains, or individual utility enhancements, from the enjoyment of attending live foot-
22 ball. Enjoyment can come from event uncertainty as argued by Nalbantis et al. (2015) and
23 Pawlowski et al. (2017), or how actual results differ from what was expected (Coates et al.,
24 2014). Coates et al. (2014) focus on the relevance of fans’ desire to witness upsets as against
25 seeing the home team win games, depending on reference-dependent preferences and loss aver-
26 sion of fans. These factors have important impacts on a consumer’s decision to attend a match

as well as their pre-disposal to generate local economic spillovers. However, little evidence is found indicating that the precise level of deviation from expectation matters. The consequent economic benefits of increased GDP contributions can be felt both locally by clubs and at the aggregate level of the economy.

Pawlowski et al. (2017) find that fans' perceptions of suspensefulness of games are distinct from their perceptions of game uncertainty, and are dominated by loss aversion which is a factor independent of fanship status. Nalbantis et al. (2015) conclude that fans' notions of competitiveness have a strong influence on their spending behaviour; this rises as the perceived competitive balance rises. Game preference in the face of uncertainty, especially when competitively balanced teams play, has a strong impact on spending behaviour including the decision to travel to watch live football events. This can inform promotion of tourist visits to the UK. Further, travel need not be solely to watch the star sides, many tourists travel to watch underdogs (Koenigstorfer et al., 2010); impacts will be felt well outside the football hotbeds of London, Manchester and Liverpool. Irrespective of the uncertainty argument, the global reach of the game continues to grow and there exists significant potential for successfully targeting non-UK residents to attend UK football matches. Concepts of competitiveness cannot be readily explored directly within the IPS data but, given the positive effect of football on expenditure demonstrated, do inform potential routes for promoting football.

Analyses of expenditure across tourism, sporting focused or otherwise, have been traditionally OLS driven (see Brida and Scuderi (2013) and Thrane (2014)), including papers analysing sports tourism. In recent years new methodologies have been employed within studies on tourism expenditure and distributional techniques have also become more widely used. Quantile regression (QR) (Koenker and Bassett Jr, 1978) has been increasingly adopted (Almeida and Garrod, 2017; Chen and Chang, 2012; Marrocu et al., 2015) because it allows researchers to study the impact of covariates more effectively, moving away from a focus mainly on the mean. Santos and Cabral Vieira (2012) compares OLS and quantile regressions to underline

the benefits of QR. It is subsequently demonstrated how use of UQR extends the methodology further, and enables a significant contribution to the discussions emerging from the literature.

Data and Methodology

Data is taken from United Kingdom International Passenger Survey (IPS). The UK Office for National Statistics has been collecting information for the International Passenger Survey since 1961. Approximately 300,000 interviews are conducted every year, from which around 250,000 observations are used to provide statistics related to overseas travel and tourism. This constitutes a very large sample survey which has been consistently collected and comparable, high-quality intertemporal data is provided on a regular basis (quarterly and annually). Within any given survey year additional questions are included to support particular policy objectives. As well as asking about football attendance, Office for National Statistics (2015) also includes questions relating to the influence of advertising channels and shopping behaviour of respondents. Advertising channels are incorporated as explanatory variables in our paper. A more detailed guide is available as a supplementary appendix to this paper.¹ Before looking at the summary statistics, the novel measures of expenditure that form a key contribution of this paper, are introduced and evaluated. A preliminary analysis includes the summary statistics and sample comparisons that identify the characteristics of football attendees within the IPS dataset. Empirical analysis presents the UQR approach used and the way expenditure effects are captured.

Measures of Expenditure

This paper aims to understand not only the impact that football attendance has on tourist expenditure within the UK, but also to do so across the full expenditure distribution. Expenditure

¹As well as the appendix the interested reader is also directed to the comprehensive guide to the IPS, including all questionnaires and summary outputs from press releases, available at Office for National Statistics (2015) (<http://doi.org/10.5255/UKDA-SN-7534-4>), the study information document (ONS, 2015a) and the regular travel trends publications (ONS, 2015b).

covers all spending during a visit by tourists to the UK, excluding air fares and duty free purchases and is compiled using ONS data. Expenditure is reported for the respondent and includes only amounts that they personally spend whilst in the UK, but spending from other members of the party is excluded. The most up-to-date data set available including questions on football attendance is used. This is the 2014 IPS dataset (Office for National Statistics, 2015). In this large cohort survey respondents are asked whether they attended any football matches and, if so, which stadia they visited (in addition to trip characteristics and respondent demographics). Just over 1.8% of respondents attended live football, but at more than 1100 observations this represents a large enough sample in absolute terms to enable robust subsequent analysis². Using detailed information on football match attendance and a clearly defined expenditure measure, it is possible to evaluate the impact of in-stadia match viewing using both the total expenditure and spending excluding estimated expenditure on purchasing match tickets. The latter measure is a new approach to such analysis which helps in disaggregating effects across beneficiaries.

Table 1 details the prices of tickets and the number of attendees at each stadium based on ONS data in our sample. Ticket prices are taken from the football industry supported BBC cost of football survey (BBC, 2014), and ignore corporate pricing options. With no data available on ticket types purchased it is assumed that these countervailing effects balance out permitting use of an average of the minimum and maximum ticket price to calculate expenditure. For this purpose the BBC use standard seat-only tickets for the stadium. Differentials in price are typically generated by distance to the pitch, height, any structural impediments to view, and so on. Prices may also vary based upon the relative league position of teams, and competitiveness of the opposition. The most visited stadia belong to clubs with the greatest history of success (Manchester United, Liverpool and Arsenal). The major drivers of visits include geography, a sense of community, and interest in and identification with particular football teams (Coates

²For the 2012 Olympics and Paralympics respondents were asked whether their primary purpose of visiting the UK was attendance, 515 were so motivated. There were also 175 participants and 138 who were on work related visits for the Games. This total represents less than 1% of the total response from departing visitors in the 2012 dataset (Office for National Statistics, 2013)

et al., 2014; Peng et al., 2016). Breaking down attendance by region of origin reveals East Asians disproportionately attending established successful teams like Manchester United and Arsenal, whilst Australasian visitors overwhelmingly attend London clubs. Full results are presented in the supplementary material to this paper. As typically successful teams record more wins, they find it easier to sell out their tickets, whereby their stadium capacity constraint is likely to drive prices up. An observed anomaly relates to the large number of attendees at St Mirren for which regional break down shows many of these visitors being overseas resident British. It is assumed that supporters pay the average “home” price.³

Table 1 about here

To construct adjusted expenditure the representative price of one match ticket for each football stadium an individual attends is deducted from the reported spend. Only one ticket per stadium visit as IPS expenditure is reported for each individual respondent. Football seasons run from August until May such that 2014 saw the end of the 2013/14 season and the commencement of the 2014/15 season. £25 is used as an average price for tickets for the division below the EPL and is based upon BBC (2014). It is not suggested that those who spend more on football would otherwise have come to the UK and used their money to buy other items, nor that all other items would bring equal benefit to the UK economy. The adjusted measure goes some way towards assuming no substitution of other goods for football. A third option using prices of programmes, pies and cups of tea is also considered, but given that the data provides scant indication of whether attendees do indeed buy these items, these results are presented as a supplemental appendix for interested readers. Results thus obtained are analogous to those for the ticket price adjusted measure. Many tourists travel to the UK solely for attending football (Peng et al., 2016) but these respondents cannot be identified individually from the IPS sample. The analysis that follows focuses on visitors who come to the UK and attend football matches

³Further links may be made between overall expenditure and ticket prices by assuming some degree of proportionality between the two, but such a measure would be more crude than the average approach adopted here.

from the observed IPS set of visitors. Total expenditure in this analysis captures spending within the economy attributable to each visitor.⁴

Preliminary analysis

Two continuous variables are explored within the analysis and each is reported in logs to mediate impacts of extreme (large) values. Table 2 summarizes the full set of variables used. The expenditure information is related to the additional revenue mentioned in Visit Britain (2015). This is also picked up by the two-sample *t*-test of equality of means reported in the final column of Table 2. Average expenditure is 5.918 (£372) dropping to 5.914 (£370) when ticket prices are removed, which is a very small change. Although this is a small overall change, for those who attend football matches the average reduction is £47.55. Football attendees spend more on average than non-attendees. This increase remains significant when adjusted expenditure is used. Stay durations are almost identical, implying football is seldom a reason to extend a trip.

Table 2 about here

Unsurprisingly, the biggest difference is observed within the gender make up of the two samples. The proportion of males in the football attending group is 77.7% whilst the overall sample is only slightly gender unequal, being 53.9% male. Visitors going to matches are also younger than the general population of tourists, with a higher proportion being under 25 years of age (16.2% in the non-attending group versus 22.3% in the attending set). For age, motivated by the interest in older travellers (Chen and Chen, 2018; Chen and Shoemaker, 2014; Sedgley et al., 2011), over 65s are used as the reference category to highlight the effects of working age and being younger. Requiring a visa does not have a large differential impact. 21.5% of match attendees travel from countries for which a visa is needed to travel to the UK, compared to 22.0% in the full sample.

⁴Results based on daily expenditure, as suggested by Sun and Stynes (2006), are presented in the online supplemental note provided.

Purpose of visit is viewed as an important factor in determining expenditure within previous research (Brida and Scuderi, 2013; Marrocu et al., 2015; Thrane, 2014). The IPS includes 28 different purposes reported for travel. Purposes are combined into three categories, holidaying, business travel and longer or family related visits. Almost half of tourists (47.2%) fall under the latter “visitor”category, with this largest purpose grouping then becoming the reference category. When looking at the football sample it is clear that fewer tourists who are in the UK on business attend football than the general population, and a similar conclusion also holds true for those on holiday. Longer stayers, or family visitors, watch significantly more football: 68.5% of attendees fall into this category. These types of visitor are more likely to have affiliations to a team.

Lone travellers are the reference category for group size given they are the most common respondent type comprising 56.4% of the whole sample, but such tourists account for only 49.6% of football attendees. Group size refers to the total number of members in the travelling party irrespective of age. Dummies on larger groups highlight the community effect identified by Cox (2016) and Peng et al. (2016). Relevant factors which influence where people visit are included since information for this aspect is included within additional questions in the 2014 IPS; these variables have relevance to spending behaviour (Backer et al., 2017; Bronner and de Hoog, 2016). Football attendees are more likely to be influenced by review websites and the traditional media, which is related to creation of virtual communities and creation of interest in sports engendered by broadcasting, as discussed in Peng et al. (2016) and others.

Table 3 about here

1 Empirical Analysis

2 Using unconditional quantile regressions (Fortin et al., 2009), this study employs a recent, novel
3 technique which is as yet underexploited within sports and tourism economics. Adoption of
4 UQR over QR has two key benefits. Firstly, the robust nature of UQR to covariate selection
5 (Borah and Basu, 2013) is a clear advantage over QR in a field where choice of explanatory
6 variables is not definitive (Thrane, 2014). Secondly, the two stage approach of transforming
7 the dependent variable, and then running regressions, permits more options to study the role of
8 explanatory factors; the fixed effects format adopted here being one such example. These two
9 advantages enable a better understanding of expenditure effects as compared to previous studies
10 involving sporting events.

11 This paper's approach draws on the value of studying beyond the mean and, once the bene-
12 fits of distributional analysis are established, the advantages of UQR over QR. Owing to limita-
13 tions within the IPS dataset and possible unobserved heterogeneity, fixed effects for the region
14 from which the visitor travels are introduced. Table 3 lists the areas employed in the analysis
15 and shows the proportion of visitors from each region who attend live football events in the
16 UK. Therefore an element of the unobserved heterogeneity within inbound tourists is captured.
17 Whilst nationality is described as an important control variable, low attendance numbers mean
18 there is insufficient data to disaggregate the fixed effects at the level of nationality of individ-
19 uals. These fixed effects are accommodated within the UQR method of Fortin et al. (2009)
20 following Borgen et al. (2016). These regions also provide information on the distances visitors
21 have travelled and the likely cost thereof.

22 Primary interest lies in explaining how attendance at live football f_i , and a commonly stud-
23 ied set of chosen covariates, X_i , affect the expenditure, EXP_i of individual i observed within the
24 IPS data. EXP in this paper may be either the unadjusted level UAD or the ticket price adjusted
25 ADJ . To reflect the varying influence of f_i and X_i at quantile τ of EXP the expenditure variables
26 are first transformed using

$$\theta(EXP, q\tau, F_{EXP}) = q\tau + \frac{\tau - \mathbb{I}(EXP_i \leq q\tau)}{f_Y(q\tau)} \quad (1)$$

1 $\theta(EXP, q\tau, F_{EXP})$ defines the recentered inference function for quantile τ and places greater
 2 weighting on the observations closest to that particular quantile. Relative importance of obser-
 3 vations is achieved through the indicator function, $\mathbb{I}(EXP_i \leq q\tau)$, which takes the value 1
 4 whenever the expenditure of individual i is below the quantile being considered, $q\tau$. F_{EXP} is the
 5 cumulative distribution of expenditure and f_{EXP} is the marginal distribution thereof. At $q\tau$ the
 6 marginal distribution of expenditure takes the value $f_{EXP}(q\tau)$. The absence of any covariates
 7 in equation 1 is what gives UQR it's strength, as it ensures estimates are not conditional on the
 8 choice of either X_i or f_i

Using the $\theta(Y_i, q\tau, F_Y)$ evaluated for individual i , observed match attendance, f_i , and the associated collection of explanatory variables X_i , the model may be estimated. Following Bor-
 gen et al. (2016) fixed effects γ_j are also included for region of origin j giving a second stage regression as follows:

$$\theta(Y_i, q\tau, F_Y) = \alpha + \phi f_i + \beta\tau X_i + \gamma_j + \varepsilon_j \quad (2)$$

9 The impact of live football captured through ϕ , the vector of coefficients β on the selected
 10 covariates, and the intercepts α . Error terms ε_j are assumed to be identically independently
 11 distributed with mean zero and constant variance within region j . Model estimation using
 12 cluster-robust standard errors has been shown to be advantageous given the assumption of un-
 13 observed heterogeneity amongst regions. Utilising a two-step process in this way means that
 14 it is easier to perform tests on the resulting coefficients. The test for parameter equality across
 15 two quantiles, τ_1 and τ_2 , is simply a test that the $\beta\tau$ coefficients are the same in a regression
 16 of $\theta(Y_i, q\tau_1, F_Y)$ and $\theta(Y_i, q\tau_2, F_Y)$ on the respective X variables. Because the distribution is

the same, the first stage is not altered and the test can be carried out using seemingly unrelated regressions with appropriate centring to account for the fixed effects.

Eighty-one models for each dependent variable and covariate set combination are estimated. These cover the varying percentiles of the expenditure distribution from the lowest decile ($\tau = 0.1$) through to the 90th percentile ($\tau = 0.9$) at the top end with an increment of 1%.⁵ There are thus have eighty-one models corresponding to each of the quantiles that are estimated. For the football attendance dummy the coefficient at each quantile states, *ceteris paribus*, the effect of attending a football match as part of the visit to the UK. For brevity the tables that follow only report the 10th, 25th, 50th, 75th and 90th percentiles.

Addressing the important questions surrounding football attendance by overseas residents and the economic benefits delivered is now possible; This paper does so across the overall expenditure distribution. A series of robustness checks with alternative specifications are undertaken but no meaningful impact of the coefficients on football attendance is noted. The ability of the IPS dataset to assess football's influence on spending remains strong and there exist sufficient covariates to provide a meaningful analysis of drivers of expenditure.

Results

Two different dependent variables are estimated, log expenditure adjusted for football ticket prices and the unadjusted log expenditure. Tables 4 and 5 present the coefficients and associated robust standard errors for both OLS estimation and UQR regression at the 10th, 25th, 50th, 75th and 90th percentiles. In so doing it is possible to clearly assess what is happening at the extremes of the distribution whilst still highlighting information from around the median. *R*-squared values for the quantiles are typically greater than 0.15, with some variation in the tails; this range is typical for quantile models and especially UQR (Fortin et al., 2009). A

⁵From $\tau = 0.10$ to $\tau = 0.90$, inclusive, at intervals of 0.01 there are 81 different quantiles (0.10, 0.11, 0.12 ... 0.87, 0.88, 0.89, 0.90).

test for quality of coefficients at all five quantiles is provided in the final column, rejecting the null hypothesis of parameter equality in almost all cases.⁶ The differentials across quantiles are highly noticeable as are striking differences between the UQR coefficients and their OLS counterparts.

The fixed effect OLS models show significant increases in expenditure, but when adjusting for ticket prices this effect becomes smaller and insignificant at the 5% level. Results obtained from OLS regressions show that attendance at live football increases expenditure significantly, consistent with (Visit Britain, 2015). However, when the price of tickets is taken out, this result becomes insignificant suggesting that many of the extra benefits of football attending visitors are experienced by the clubs and not driven by higher spending in the wider economy⁷.

Table 4 about here

Table 5 about here

Figure 1 about here

Table 4 shows that there are significant impacts at $\tau = 0.75$ and $\tau = 0.9$ with variations across quantiles. When using the unadjusted figures all quantiles are significant, with the highest value observed at $\tau = 0.1$ which is more than twice the OLS value. Plotting these coefficients alongside the other τ values enables easy visual determination of the variation in the estimated expenditure increasing effect. Figure 1 illustrates the variation in coefficients clearly using solid lines for UQR and dot-dashed lines for OLS, thick lines for coefficients and thin lines for the 95% confidence interval; differences are particularly apparent in the unadjusted case in panel (b). For adjusted expenditure, significance is clear for almost all $\tau > 0.6$ but the coefficients consistently move around the OLS value. In the unadjusted case a smoother plot appears with greater than average impacts for lower τ values. Some evidence of variation from the OLS

⁶Tests between each pair of coefficients in the supplementary material.

⁷Should proportional ticket pricing be considered then the lower end may remain significant but the broader conclusion of insignificance would hold.

confidence interval is also noted. UQR coefficients show significant increases amongst normally high spenders even when football ticket prices are accounted for. When the dependent variable is total expenditure the live football attendance dummy is significant at each τ level, but the effect is larger at the lower end of the expenditure distribution. Using a total day out expenditure measure which accounts for refreshments and matchday programmes produces similar results to the ticket price adjusted measure presented here⁸.

Within the existing literature, length of stay is a common predictor of increased expenditure and the UQR results are also consistent with this finding (Brida and Scuderi, 2013; Thrane, 2014). However, a significant difference emerges in the strength of this relationship being proportional to the quantile within the UQR, with OLS coefficients overstating the importance of duration for the majority of the respondents. Age of the respondent has a stronger impact on lower spenders, a result that could be inferred from the higher spending of seniors with disposable income identified in Chen and Chen (2018). Sedgley et al. (2011) bring closer alignment to working age at the upper end of the distribution. For the working age category a coefficient of 0.564 results for adjusted expenditure at the 10th percentile, $\tau = 0.10$, compared with just 0.149 at the median and 0.142 at the 90th percentile. There is little significance in the difference between expenditures for under 25s and the over 65s as might be expected when allowing for interest in the sport across age categories. This has roots in the discussion of Chen and Shoemaker (2014). The number of members in the travel group is significant in reducing expenditure, and this result applies across the distribution. Primary intuition for this result comes from economies of scale in group travel e.g. hotel room sharing. Holidaymakers spend more money, particularly at the lower end of the distribution, compared to longer stayers; business travellers behave likewise. This is as anticipated given those staying longer, or staying with British family, would be more familiar with ways of saving money. Visa requirements to travel to the UK is a new variable included within this analysis and it does have a significant role on both dependent variables when OLS regression is applied. UQR demonstrates that it is

⁸Please see supplementary material.

the upper end that is driving the result. Highly significant increases above $\tau = 0.5$ are found at $\tau = 0.75$ and $\tau = 0.9$. That there are limited impacts at the lower end of the distribution is linked to the cost of visas and the proportion of income represented by visa costs.

A negative coefficient on friends aligns with the work of Backer et al. (2017), as those friends being visited can help their visitors to save money and find ways to economise. Guidebooks promote spending as would be expected and the same is true for review websites. Again results are consistent with past research focusing on spending influences e.g. Bronner and de Hoog (2016). Tourist boards are able to influence their clients into spending, or saving, as they see fit. An expenditure enhancing role of boards is seen, suggesting the boards are successful in encouraging people to visit more places and consequently spend more. Though the traditional media has been cited as a reason for interest in football no significant impact of traditional media on expenditure is found. However, social media can be used to encourage visitors to spend more, or to attract visitors who would otherwise have spent less had they not learned of specific tourist attractions. Football clearly attracts visitors to the UK and those visitors spend money on other goods and services whilst within the UK. However, the use of UQR reveals that this broad observation oversimplifies a more complex picture of distributional impact, and the role played by ticket prices in explaining differences in tourist expenditures. It would be naive to treat the promotion of football attendance equally amongst high and low spenders.

Given the global reach of the game (Javid, 2015) effective understanding of policy options through which to stimulate football attendance must recognise different characteristics within the intended audience nationalities. Analysis is extended by considering regions separately, better understanding of the effect of attendance can be achieved. Owing to the comparatively low number of attendees from some regions only those regions with more than one hundred attendees are included in the analysis viz. European Union, Europe but not in the EU (non-EU) and North America. Table 6 summarises the coefficients on attendance at live football dummy, while Table 7 shows the regional parameter equality tests. A full discussion of the results is

provided in the online supplemental note provided.

Table 6 about here.

Figure 2 about here.

Table 7 about here.

Differences between regions are clear with North American coefficients being the smallest amongst the three highlighted regions. In the unadjusted figures the differential is not as large, meaning that visitors from North America who attended football spent less additional money outside the stadium, i.e. within the local economy, than Europeans. Using UQR significant differentials between coefficients across the five estimated τ s in three of the six cases are found. Only for North America is no significant variation in the impact of attendance noted. To highlight these variations all four sets of UQR coefficients are plotted on the same axes, leaving off OLS results for clarity. Similar to the full dataset analysis, $\tau \in [0.1, 0.9]$ is presented. Figure 2 plots only the coefficients from the regional regressions using solid lines for European Union visitors, small dot-dashed for the non-EU European nations and long dot-dashed lines for North Americans. Both plots demonstrate the greater impact of football on visitors who come from countries such as Norway which are not in the European Union. At the median this differential is at its most pronounced, but it disappears as $\tau = 0.9$ is approached. North American visitors behave very similarly to European Union visitors, as shown in both the adjusted and unadjusted plots. However, there is a clear split between the two coefficient series just below the median.

Testing the significance of the difference between the impact of live football on expenditure for the three single region model-pairs reveals that there are significant differences between those European countries which are not members of the European Union, and the EU and North America. No significant differentials are detected between the European Union and North American coefficients, although, as Figure 2 demonstrates, there are some larger gaps between the values just below the median. For the other regions notably lower impacts from live football

attendance are seen. Aside from a small range at the lower end of the unadjusted expenditure distribution, the impact of attendance is negative.

Discussion

Football's importance is well established by the size of its broadcast deals, the levels of football related tourism, and strong fan loyalty. Quantifying the economic benefits of global interest, particularly through increased expenditure by inbound tourists, is an important next step to realising the game's potential. Using UQR with region of origin fixed effects allows the impact of live football on UK inbound tourist expenditures to be quantified. Data from the IPS provides a significant opportunity to gain insight from a large ongoing survey. In conjunction with the BBC cost of football survey, this research presents a novel application used to provide further empirical analysis. This paper provides a deeper understanding of the extent to which attendance effects link with extant works on sports tourism, travel motivation and sport management approaches.

While football generates significant revenues and expenditures from followers, such financial flows vary across the distribution of total expenditures incurred by tourists. Accounting for ticket prices is an important element of determining impact because, as shown by this paper's results, under the adjusted measure it is higher spenders where match attendance has the greatest impact on tourist expenditures. This result is obtained notwithstanding concerns about the local use of ticket revenue (Bi, 2015) and negative community effects, as highlighted in Kim et al. (2015). Though the magnitude of the unadjusted effect is larger for low spenders, encouraging attendance by all visitors is, on balance, good for the economy. Only at the top end of the spending range is there a continued significant positive impact for football attendees that can be seen as something worthwhile to be promoted. These new distributional insights are extensions to extant work.

While it is established that mega events can bring positive spillovers for the host economy

(Rose and Spiegel, 2011), a similar value is demonstrated here for regular domestic league games. As a result of the large expense involved in hosting the biggest fixtures of the sporting calendar, being able to build on regular league encounters is of great benefit both for tourism promotion and wider positive spillovers for the general UK economy. Likewise the occurrence of fixtures in off-peak tourism periods means spare capacity in the sector exists which can be further exploited. Significant roles for social media and review websites in guiding visitors on what to do in the UK are identified, making these good platforms for promotion generally. Social interaction platforms are also significant sources of fan interest (Cox, 2016; Peng et al., 2016) adding further weight to their wider adoption. More established methods of informing tourists, guidebooks and tourist board publications, are also significant in delivering greater expenditure. However, traditional media such as newspapers and television are found to be insignificant despite their strong association with reporting the game and generating interest therein (Javid, 2015; Pawlowski et al., 2017).

A challenge is posed to the interpretation of the results by the lack of knowledge about which games were attended, as a result of which findings cannot be directly linked to the literature on competitiveness. However, a strong link between clubs attended and success broadly supports the notion that expenditure is linked to matchday experience (Davis and End, 2010), whilst acknowledging the uncertainty and enjoyment aspects as shown in Nalbantis et al. (2015) or Coates et al. (2014). Formalising the link between increased expenditure outside the stadium and local economic benefit of the types seen in Gibson et al. (2003); Roberts et al. (2016); Ge (2018) is challenging as respondents do not say where they spend. Ticket-price adjusted expenditure increases does suggest such a relationship, however.

Notwithstanding the challenges outlined, a number of important policy implications emerge. First, there is a need to ensure transparency and professionalism in management of football clubs and associated brands, particularly keeping in mind the need to nurture the international fan base which exists for a number of clubs. Next, there is a need for effective government

policy, particular with respect to local impacts, to ensure that football remains accessible to local and international fans, and ensuring that local fans are not “priced out”. Finally, there is a strong need for co-ordinated and targeted tourism and sport promotion strategies focused on key overseas markets which are home to fans, as well as ensuring factors such as visa requirements do not become an unnecessary obstacle to legitimate travel. Each contribution derives importance from the positive spillovers and gains to the clubs, their localities, and the economy more widely. Given the importance of globally dispersed fans and spectators as well as sporting brand building and merchandising (Kolyperas et al., 2018), the role of tourists attending live football events is highly relevant for ‘word of mouth’ promotion within overseas based fan communities. Results on the variations within tourist expenditures provide useful pointers for more effective spending of sport and tourism promotion budgets. Greater focus on more loyal and higher spending fan groups is key to determining the likely effectiveness of such strategies for benefit of local communities. Government policies can encourage further expenditure and help leverage regular sporting fixtures in order to generate increased revenues, including during off-peak travel seasons.

Conclusions

Benefits from footballing events spread beyond the stadium walls into the wider community, particularly at the top end of the spending distribution. Future work is required to evaluate the geographic extent of the spillovers as the IPS data does not allow assessment of where attendees spend their non-football related funds. Impacts at the aggregate level for the UK economy are thus identified. Capacity constraints mean visitors often buy tickets at the expense of local supporters, whilst a sense of identity can be diluted reducing the attractiveness of the event that brings in the visitors. Notwithstanding these concerns, it has been shown that carefully thought out promotion, supplementing traditional media, can enhance inbound tourist numbers by generating additional interest in attendance at live football events in the UK. Spillovers to

the UK economy arise, as shown by positive coefficients of adjusted expenditure, and these spread over the entire football season. There is significant benefit from creating demand in a low season period for the tourism industry and for the wider economy. The analysis of this paper is compiled from tourists who have already made the decision to come to the UK. However, to evaluate the net benefits of promoting football attendance it would be beneficial to study the choice to travel to the UK in the first place. Only once it is established that football brings visitors who would not otherwise travel can the full potential of the game in enhancing tourist expenditures be understood.

Where greater data becomes available the single period data dependence limitation experienced here may be addressed. Possible alternative approaches could include panel methods provided new data is sufficiently longitudinal, or decomposition methods which also offer a marked improvement over currently employed alternatives, particularly those such as UQR which focus beyond the mean. However, decomposition methods also face a limitation in the sense that such decompositions may not necessarily deepen understanding of the fundamental processes governing relationships between factors and outcomes. Behavioural research and behavioural methods may be useful for overcoming such limitations but those approaches are out of scope for the current paper.

Three important contributions to the literature are made. First, a detailed analysis of the role of sporting events in general, and the English Premier League in particular, for generating growth by promoting inbound tourist expenditures using the UK IPS data. This paper is the first study to address this research gap. Second, significant methodological improvements through the use of unconditional quantile regression analysis are made. More robust results are provided compared to the simple application of OLS, frequently adopted previously, or the use of conditional quantile regression in preliminary distributional analyses. Use of UQR enables robust assessment of the distributional impacts of any regular sporting events, such as UK EPL football matches considered here, on tourist expenditures across the spending distribution. Fi-

1 nally, by using a more appropriate expenditure variable, adjusted for ticket prices, a key local
2 impact contribution is made. By doing this it facilitates better assessment of the impact of live
3 football on general expenditure and thus a better understanding of the expenditure flows into
4 the UK economy. The implications of this study for other nations and other sports, as well
5 as for social science research, are clear. Methodological enhancements demonstrated here are
6 highly applicable to other, related contexts. Promotional opportunities are identified that can
7 help realise football's potential in enhancing tourist flows, increasing tourist expenditures and
8 generating growth within the economy.

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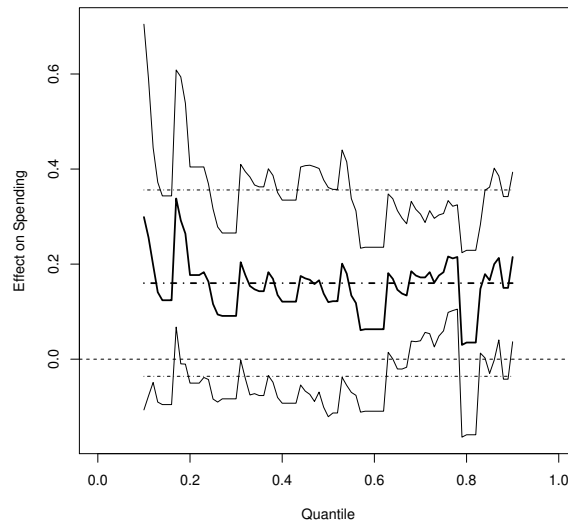
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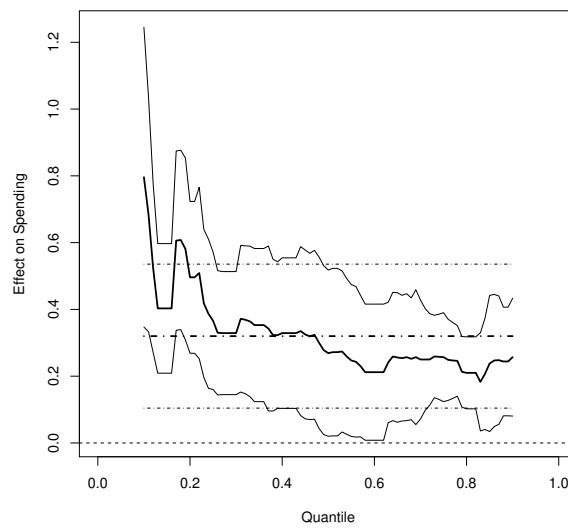
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Figure 1: Impact of Live Football Attendance on UK Inbound Visitor Expenditure



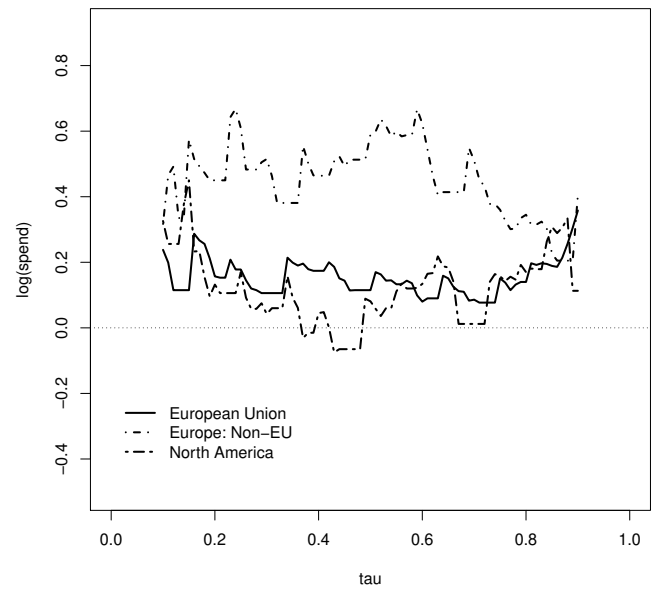
Panel (a) Adjusted expenditure



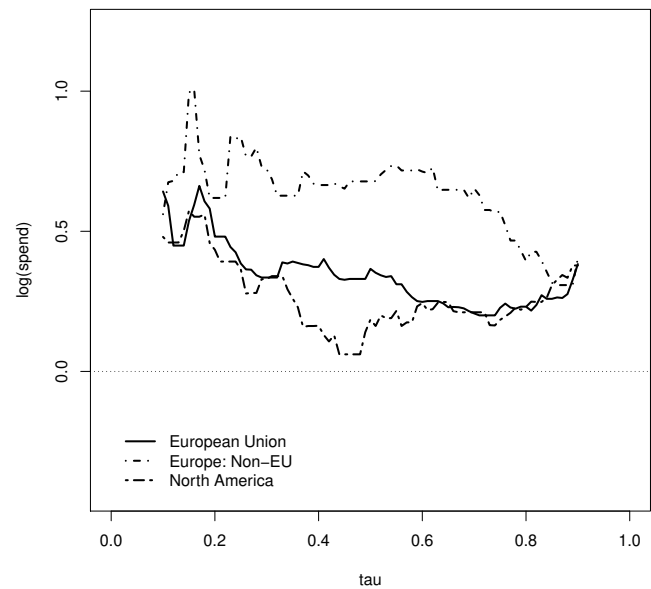
Panel (b) Unadjusted expenditure

Notes: Panel (a) displays ticket price adjusted expenditure. Panel (b) shows the total expenditure recorded for each visitor. 95% confidence intervals are plotted as dotted lines for the UQR. OLS coefficients are plotted using a dot-dash line, with corresponding 95% confidence intervals drawn as dotted lines

Figure 2: Impact of Live Football Attendance on UK Inbound Visitor Expenditure by Region



Panel (a) Adjusted expenditure



Panel (b) Unadjusted expenditure

Notes: Panel (a) displays ticket price adjusted expenditure. Panel (b) shows the unadjusted expenditure recorded for each visitor. Confidence intervals and OLS coefficients are omitted for clarity.

Table 1: Minimum, Maximum and Average Prices of Football

Stadium	Club	City	Region	Respondent Count	Price Information		
					Minimum (£)	Maximum (£)	Average (£)
Wembley	National	London	South East	73	50	50	50
Millenium Stadium	National	Cardiff	Wales	7	40	40	40
Hampden Park	National	Glasgow	Scotland	6	40	40	40
Windsor Park	National	Belfast	N. Ireland	3	40	40	40
Emirates Stadium	Arsenal	London	South East	140	27	97	62
Villa Park	Aston Villa	Birmingham	Midlands	18	22	45	35.5
Cardiff City Stadium	Cardiff City	Cardiff	Wales	9	18	40	29
Stamford Bridge	Chelsea	London	South East	118	50	87	68.5
Selhurst Park	Crystal Palace	London	South East	16	30	40	35
Goodison Park	Everton	Liverpool	North West	30	33	47	40
Craven Cottage	Fulham	London	South East	37	25	45	35
KC Stadium	Hull City	Hull	North East	5	16	50	33
Anfield	Liverpool	Liverpool	North West	153	37	59	48
Etihad Stadium	Manchester City	Manchester	North West	54	37	58	47.5
Old Trafford	Manchester United	Manchester	North West	165	36	58	47
St James Park	Newcastle United	Newcastle	North East	20	15	52	33.5
Carrow Road	Norwich City	Norwich	East Anglia	11	25	40	32.5
St Mary's Stadium	Southampton	Southampton	South	12	32	52	42
Britannia Stadium	Stoke City	Stoke	Midlands	3	25	50	37.5
Stadium of Light	Sunderland	Sunderland	North East	9	25	40	32.5
Liberty Stadium	Swansea City	Swansea	Wales	4	35	45	40
White Hart Lane	Tottenham	London	South East	11	32	81	56.5
The Hawthorns	West Brom	West Bromwich	Midlands	3	25	39	42
Boelyn Ground	West Ham	London	South East	27	20	75	47.5
Pittodrie	Aberdeen	Aberdeen	Scotland	5	24	30	27
Celtic Park	Celtic	Glasgow	Scotland	11	23	34	28.5
Tannadice	Dundee United	Dundee	Scotland	0	19	25	22
Tynecastle	Hearts	Edinburgh	Scotland	0	17	30	23.5
Easter Road	Hibernian	Edinburgh	Scotland	0	22	28	25
Caledonian Stadium	Caley Thistle	Inverness	Scotland	1	16	30	23
Rugby Park	Kilmarnock	Kilmarnock	Scotland	0	17	26	21.5
Fir Park	Partick Thistle	Glasgow	Scotland	0	22	25	23.5
Fir Hill	Motherwell	Motherwell	Scotland	2	22	25	23.5
Global Energy Stadium	Ross County	Dingwall	Scotland	1	20	26	23
McDairmid Park	St Johnstone	Perth	Scotland	1	22	23	22.5
St Mirren Stadium	St Mirren	Glasgow	Scotland	23	20	22	21
Other				185	25	25	25
Total				1163			

Notes: All data is sourced from the BBC Cost of Football Survey 2014 (BBC, 2014), whilst averages are computed using own calculations. Maximums are for standard seats and do not include corporate hospitality. Where a team changed divisions the price used remains that given in the survey. In the case of the national stadia there is large variation in prices and so the numbers used are averaged based on prices at a typical game at the venue. West Brom is used as shorthand for West Bromwich Albion and Caley Thistle is used in place of Inverness Caledonian Thistle

Table 2: Summary statistics

Variable	Mean	Std Dev	Min	Max	Attend Football?		
					No	Yes	Difference
Log expenditure	5.918	1.264	0	11.80	5.911	6.167	0.257***
Log expenditure (adjusted)	5.914	1.268	0	11.801	5.911	6.006	0.095*
Length of stay (log)	1.573	0.982	0	5.892	1.572	1.600	0.029
Attend live football	0.028	0.166	0	1	-	-	-
Air departures	0.832	0.374	0	1	0.829	0.932	0.103***
Male	0.546	0.498	0	1	0.539	0.777	0.238***
Aged under 25	0.164	0.370	0	1	0.162	0.223	0.061***
Aged 25 to 64	0.760	0.427	0	1	0.760	0.740	-0.020
Aged 65 and over	0.075	0.264	0	1	0.076	0.036	-0.040***
Purpose: Holiday	0.382	0.486	0	1	0.385	0.282	-0.103***
Purpose: Business	0.180	0.384	0	1	0.184	0.039	-0.145***
Purpose: Visit	0.438	0.496	0	1	0.431	0.679	0.248***
Require visa	0.220	0.414	0	1	0.220	0.215	-0.005
Group size: 1	0.564	0.496	0	1	0.566	0.486	-0.080***
Group size: 2	0.271	0.444	0	1	0.270	0.300	0.030*
Group size: 3	0.166	0.372	0	1	0.164	0.214	0.049***
Influence: Friends	0.380	0.485	0	1	0.379	0.395	0.016
Influence: Guidebook	0.078	0.267	0	1	0.078	0.076	-0.002
Influence: Review sites	0.071	0.256	0	1	0.070	0.088	0.018*
Influence: Tourist board	0.029	0.169	0	1	0.030	0.024	-0.006
Influence: Media	0.018	0.134	0	1	0.018	0.029	0.011**
Influence: Social media	0.031	0.173	0	1	0.031	0.033	0.002

Notes: Summary statistics are reported for the 39,515 observations for which a complete set of information was available. Means are additionally reported for those who do not attend live football, “No”, and those who did attend one or more matches, “Yes”. The difference between means and significance from a two-sample t-test of mean equality are reported. For the latter significance is denoted by *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$. Data from Office for National Statistics (2015).

Table 3: Region of Origin and Football Attendance

Region	Attend?		Total	Region	Attend?		Total
	No	Yes			No	Yes	
North America	5437	112	5549	Europe: Non-EU	4992	210	5202
Central America	112	3	115	Indian Subcontinent	1026	6	1032
South America	694	11	705	East Asia and China	1854	48	1799
Africa	953	16	969	Australasia	1742	57	1799
Middle East	955	40	995	Other	4554	170	4724
European Union	16087	446	16533	Total	38406	1119	39525

Regions are calculated by first generating dummies for each of the nation codes that are included within the data. There are also a number of respondents for whom residence is an overseas British territory and these fall within the other category.

Table 4: Unconditional Quantile Regression Estimates for UK Inbound Expenditures: Adjusted Expenditure

Variable	Football ticket adjusted expenditure						Equality
	<i>OLS</i>	$\tau = 0.10$	$\tau = 0.25$	$\tau = 0.50$	$\tau = 0.75$	$\tau = 0.90$	
Length of stay (log)	0.522*** (0.028)	0.664*** (0.050)	0.424*** (0.026)	0.496*** (0.043)	0.602*** (0.041)	0.673*** (0.084)	102.82***
Attend live football	0.162 (0.103)	0.299 (0.207)	0.116 (0.102)	0.120 (0.123)	0.183** (0.063)	0.215** (0.091)	29.506***
Air departure	0.556** (0.214)	1.565* (0.779)	0.582** (0.188)	0.536*** (0.114)	0.332** (0.130)	0.170** (0.054)	560.08***
Male	0.100** (0.032)	0.099 (0.068)	0.084** (0.030)	0.117*** (0.022)	0.153*** (0.042)	0.122** (0.045)	12.974*
Aged under 25	-0.023 (0.059)	0.065 (0.139)	-0.071 (0.041)	-0.182*** (0.044)	-0.152* (0.071)	0.009 (0.065)	69.189***
Aged 25 to 64	0.226*** (0.056)	0.564*** (0.160)	0.208*** (0.050)	0.149*** (0.035)	0.134** (0.053)	0.142** (0.050)	53.424***
Purpose: Holiday	0.474*** (0.042)	1.346*** (0.144)	0.644*** (0.078)	0.472*** (0.035)	0.247* (0.120)	0.061 (0.098)	103.54***
Purpose: Business	0.332** (0.147)	0.189 (0.455)	0.336** (0.117)	0.455*** (0.091)	0.536** (0.171)	0.371** (0.119)	25.213***
Require visa	0.428** (0.136)	0.361 (0.320)	0.205 (0.121)	0.351** (0.117)	0.707*** (0.144)	0.808** (0.278)	155.93***
Group size: 2	-0.220*** (0.020)	-0.252** (0.086)	-0.229*** (0.027)	-0.224*** (0.019)	-0.287*** (0.036)	-0.370*** (0.075)	31.098***
Group size: 3 or more	-0.382*** (0.026)	-0.380*** (0.091)	-0.445*** (0.059)	-0.440*** (0.040)	-0.514*** (0.050)	-0.525*** (0.118)	9.472
Influence: Friends	-0.181*** (0.049)	-0.004 (0.129)	-0.153* (0.081)	-0.213*** (0.058)	-0.237*** (0.045)	-0.277*** (0.079)	79.960***
Influence: Guidebook	0.108*** (0.032)	0.255*** (0.034)	0.162*** (0.020)	0.131*** (0.030)	0.080 (0.052)	0.067 (0.090)	22.768***
Influence: Review sites	0.133*** (0.022)	0.181*** (0.054)	0.146*** (0.026)	0.137*** (0.019)	0.118*** (0.026)	0.135* (0.062)	1.783
Influence: Tourist board	0.183*** (0.033)	0.189* (0.096)	0.122*** (0.031)	0.259*** (0.064)	0.281*** (0.056)	0.036 (0.125)	45.098***
Influence: Media	0.050 (0.059)	-0.016 (0.148)	0.039 (0.043)	0.042 (0.069)	0.112 (0.070)	0.145* (0.072)	5.890
Influence: Social media	0.155*** (0.018)	0.331*** (0.095)	0.105** (0.034)	0.096*** (0.019)	0.168*** (0.037)	0.277*** (0.086)	47.704***
Observations	39,525	39,525	39,525	39,525	39,525	39,525	
R-squared	0.233	0.068	0.144	0.189	0.173	0.120	

Notes: *OLS* provides coefficients estimated with robust standard errors. τ denotes the regression quantile at which the UQR is estimated. UQR models fitted with cluster robust standard errors at the region of origin level. Significance denoted by *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 5: Unconditional Quantile Regression Estimates for UK Inbound Expenditures: Unadjusted Expenditure

Variable	Unadjusted expenditure						Equality
	<i>OLS</i>	$\tau = 0.10$	$\tau = 0.25$	$\tau = 0.50$	$\tau = 0.75$	$\tau = 0.90$	
Length of stay (log)	0.519*** (0.028)	0.664*** (0.052)	0.420*** (0.026)	0.491*** (0.043)	0.600*** (0.041)	0.675*** (0.084)	55.414
Attend live football	0.324** (0.107)	0.796*** (0.229)	0.366*** (0.105)	0.269* (0.127)	0.257*** (0.068)	0.257** (0.090)	55.516***
Air departure	0.555** (0.214)	1.589* (0.789)	0.585** (0.188)	0.533*** (0.114)	0.331** (0.130)	0.167** (0.054)	3696.6***
Male	0.099** (0.032)	0.101 (0.066)	0.084** (0.030)	0.118*** (0.022)	0.155*** (0.042)	0.119** (0.044)	11.376*
Aged under 25	-0.022 (0.060)	0.086 (0.142)	-0.072 (0.040)	-0.184*** (0.046)	-0.150* (0.072)	0.011 (0.066)	33.015***
Aged 25 to 64	0.226*** (0.056)	0.570*** (0.161)	0.207*** (0.051)	0.146*** (0.036)	0.134** (0.053)	0.143** (0.051)	65.553***
Purpose: Holiday	0.471*** (0.043)	1.353*** (0.145)	0.642*** (0.078)	0.464*** (0.034)	0.246* (0.118)	0.060 (0.099)	262.11***
Purpose: Business	0.330** (0.147)	0.191 (0.459)	0.331** (0.116)	0.450*** (0.091)	0.533** (0.170)	0.375** (0.121)	147.60
Require visa	0.428** (0.136)	0.370 (0.327)	0.202 (0.126)	0.344** (0.115)	0.706*** (0.142)	0.810** (0.282)	133.18***
Group size: 2	-0.218*** (0.020)	-0.244** (0.089)	-0.226*** (0.026)	-0.223*** (0.020)	-0.289*** (0.036)	-0.370*** (0.074)	18.106**
Group size: 3 or more	-0.378*** (0.026)	-0.379*** (0.093)	-0.447*** (0.060)	-0.437*** (0.043)	-0.514*** (0.049)	-0.529*** (0.118)	9.015
Influence: Friends	-0.181*** (0.049)	0.000 (0.130)	-0.152* (0.080)	-0.210*** (0.058)	-0.235*** (0.045)	-0.278*** (0.079)	140.27***
Influence: Guidebook	0.108*** (0.032)	0.265*** (0.033)	0.157*** (0.019)	0.131*** (0.029)	0.080 (0.053)	0.065 (0.090)	8.481
Influence: Review sites	0.133*** (0.022)	0.179*** (0.054)	0.144*** (0.028)	0.137*** (0.018)	0.117*** (0.025)	0.135* (0.062)	10.537*
Influence: Tourist board	0.182*** (0.033)	0.200* (0.103)	0.124*** (0.030)	0.253*** (0.064)	0.279*** (0.055)	0.040 (0.126)	44.412***
Influence: Media	0.048 (0.058)	-0.015 (0.157)	0.029 (0.043)	0.047 (0.075)	0.109 (0.070)	0.138* (0.073)	1.540
Influence: Social media	0.155*** (0.018)	0.334*** (0.099)	0.106** (0.035)	0.100*** (0.018)	0.165*** (0.038)	0.275*** (0.086)	3.397
Constant	4.236*** (0.202)	0.954 (0.674)	3.779*** (0.147)	4.505*** (0.101)	5.210*** (0.214)	6.023*** (0.201)	
Observations	39,525	39,525	39,525	39,525	39,525	39,525	
R-squared	0.233	0.068	0.144	0.190	0.173	0.121	

Notes: *OLS* provides coefficients estimated with robust standard errors. τ denotes the regression quantile at which the UQR is estimated. UQR models fitted with cluster robust standard errors at the region of origin level. Significance denoted by *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 6: Unconditional Quantile Regression Estimates for UK Inbound Expenditure: Adjusted Expenditure

Expenditure	Region	Total expenditure						Equality
		<i>OLS</i>	$\tau = 0.10$	$\tau = 0.25$	$\tau = 0.50$	$\tau = 0.75$	$\tau = 0.90$	
Adjusted Expenditure	EU	0.181*** (0.049)	0.238** (0.104)	0.178*** (0.060)	0.115*** (0.043)	0.151*** (0.042)	0.358*** (0.082)	12.52*
	Non-EU	0.459*** (0.069)	0.317* (0.185)	0.609*** (0.122)	0.590*** (0.092)	0.360*** (0.100)	0.405*** (0.125)	7.542
	North America	0.181 (0.111)	0.326* (0.191)	0.170 (0.164)	0.081 (0.126)	0.157 (0.114)	0.113 (0.161)	1.818
Unadjusted Expenditure	EU	0.394*** (0.039)	0.642*** (0.070)	0.385*** (0.054)	0.366*** (0.042)	0.227*** (0.044)	0.383*** (0.083)	36.80***
	Non-EU	0.607*** (0.061)	0.561*** (0.124)	0.837*** (0.102)	0.678*** (0.091)	0.570*** (0.104)	0.404*** (0.125)	9.661*
	North America	0.305*** (0.099)	0.480*** (0.161)	0.364** (0.151)	0.185 (0.123)	0.184 (0.113)	0.378** (0.175)	5.411

Notes: *OLS* provides coefficients with robust standard errors. τ denotes the regression quantile at which the UQR is estimated. Significance denoted by *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.

Table 7: Regional parameter equality tests

	Region 1	Region 2	OLS	$\tau = 0.10$	$\tau = 0.25$	$\tau = 0.50$	$\tau = 0.75$	$\tau = 0.90$
Adjusted Expenditure	Europe (EU)	Europe: Non-EU	0.278***	0.079	0.178**	0.475***	0.209*	0.048
	EU	North America	-0.000	0.088	-0.009	-0.034	0.006	-0.245
	Non-EU	North America	-0.278*	0.009	-0.439*	-0.509**	-0.202	-0.292
Unadjusted Expenditure	EU	Non-EU	0.213**	-0.081	0.452***	0.313***	0.343***	0.021
	EU	North America	-0.089	-0.162	-0.021	-0.181	-0.043	-0.005
	Non-EU	North America	-0.302*	-0.081	-0.473*	-0.493**	-0.386**	-0.026

Notes: *OLS* provides tests based upon OLS regression with robust standard errors. τ denotes the regression quantile at which the coefficient equality is tested. Significance denoted by *** $p < 0.001$, ** $p < 0.01$, * $p < 0.05$.